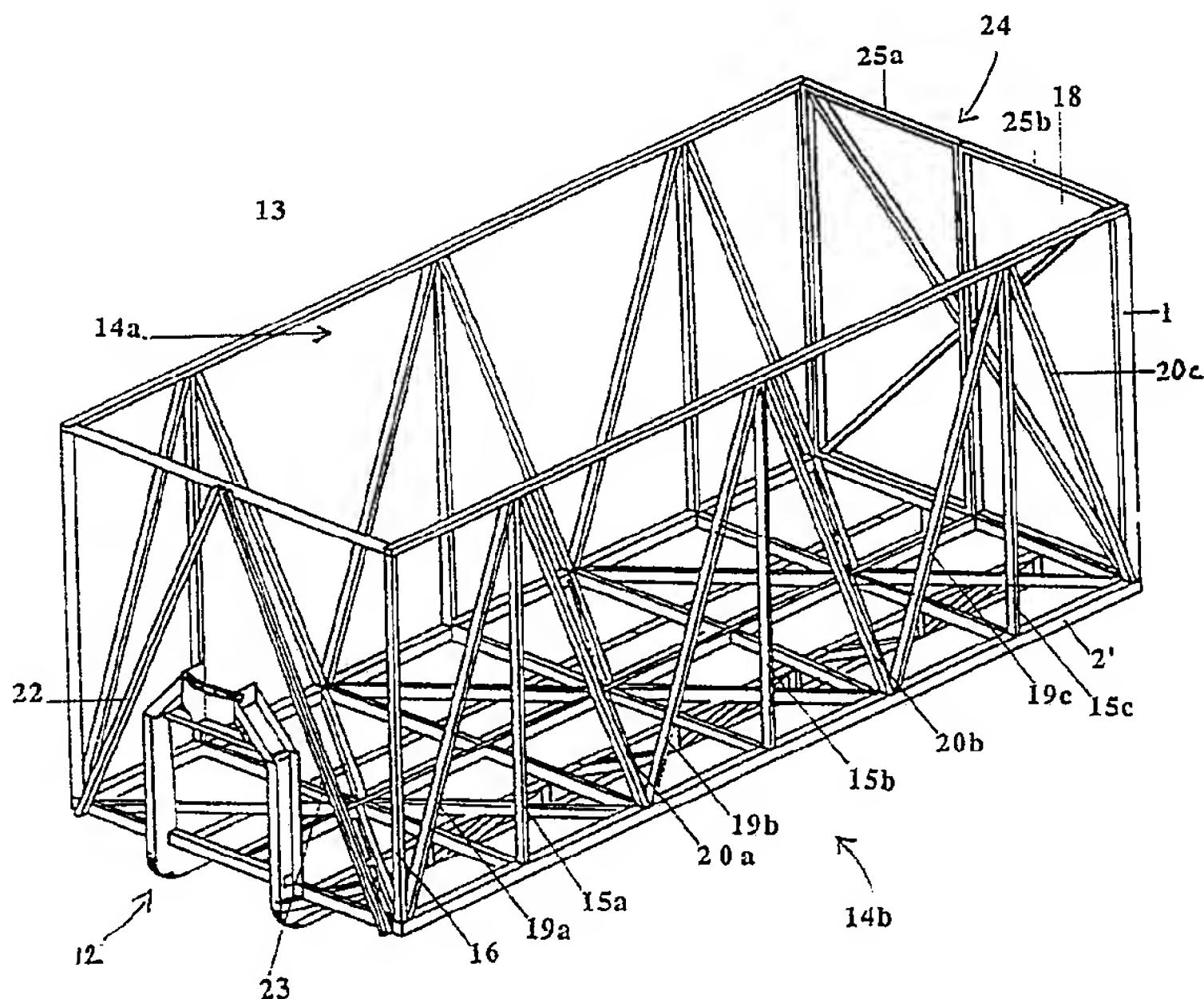




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(54) Title: LOAD CARRIER/LOAD CARRIER BODY



(57) Abstract

The present invention relates to a load carrier/load carrier body, preferably to a container. The invention is characterized in that both the bottom and the side walls of the load carrier/load carrier body (1) are load distributing lattice works (10, 11, 15, 16, 19, 20).

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LOAD CARRIER / LOAD CARRIER BODY

The present invention relates to a load carrier/load carrier body of the kind referred to in the preamble of claim 1.

The use of load carriers in shape of containers is increasing. One of the advantages with containers is that they easily can be lifted onto or pulled of different kinds of vehicles. The vehicle itself doesn't have to be present at the loading and the unloading of the container, but is free to be used for other transportation purposes. Today containers are often built as a self-supporting units, i.e. the sides and the bottom of the containers are forming parts of the load-supporting construction.

Of decisive importance for the term of life of constructions being subjected to cyclic loads is a correct dimensioning regarding the fatigue of material. High quality and strong material will not be sufficient if cyclic loads leading to great stresses/concentrations of tensions are allowed to appear. Each loading and unloading of containers subject involves high concentrations of tensions as a container often is made very stiff. Also the covering steel walls of the container form part of the load supporting construction, which makes it possible to avoid concentrations of tensions. This is true also if the container is lifted in hooks or if it is pulled up onto a vehicle with a load exchanging arrangement. Thus what limits the life term of a container is the fatigue stresses during use.

Also at ISO-containers, i.e. such containers used for sea transportation and which are stacked upon eachother up to a hight of five stories, there are problems regarding the strength both in stacking, in loading and in unloading and at stresses occuring at heavy sea, especially if combined with icing.

The present invention suggests the use of a load carrier/load carrier body which can be a container or just a load carrying part of a container, or a roll on/roll of container.

The main object of the present invention is to obtain a load carrier/load carrier body which is so constructed that high concentrations of stresses can be essentially avoided during use. Hereby a load carrier/load carrier body is obtained having an increased load carrying capacity in comparision to its own weight.

An other object with the present invention is to obtain a load carrier/load carrier body being manufactured with an attractive outer covering, which easily can be exchanged in connection to

repairs or in connection to an other kind of use of the load carrier/load carrier body.

Yet another object of the present invention is to obtain a load carrier/load carrier body which easily can have an insulating external cover, e.g. to obtain a cooling container.

Still another object of the present invention is to obtain a load carrier/load carrier body in shape of a container with one or more openable sides, whereby the usefulness of the container is esentially increased.

These objects are obtained according to the invention by a load carrier/load carrier body having the characterizing clauses mentioned in the claims.

By having at least the side walls and the bottom of the load carrier/load carrier body as a lattice work distributing the loads and thus prohibiting or minimmizing the concentrations of stresses it is possible to eliminate these harmful concentrations of stresses during the use of the load carrier/load carrier body. Thus a load carrier in shape of a container can be bent and twisted within certain limits during use without the appearance of serious concentrations of stresses. By having a lattice work in the side walls and in the bottom of the load carrier it is also possible to cover these with e.g. flexible wood panels allowing a movement of the walls and the bottom of the load carrier.

Especially at load carriers in the shape of roll on/roll off containers it is important to arrange at least two longitudinal load carrying bodies in shape of girders along the bottom of the container so that these girders, except from forming rails for stationary rolling means at the vehicle and upon which the container glides or rolls during loading and unloading, also forms a reinforcing part of the whole understructure of the load carrier/load carrier body.

Regarding ISO-containers there is now according to the present invention a possibility to build containers with a maximal stapleability and with good protecting walls of a material which in itself doesn't have to be load-supporting, or in any other way must form part of the load-supporting structure of the container. This opens new possibilities to build strong, light and cheap containers.

The invention will now be described in connection to shown embodiments, where,

Fig. 1a - c are diagrammatic views of different embodiments of a lower lattice work of a load carrier/load carrier body,

Fig. 2a is a diagrammatic view of a load carrier body arranged as a roll on/roll of container and a lattice work reinforcement of the load exchanging frame,

Fig. 2b is a load carrier body with a sidebuilding in form of lattice works,

Fig. 2c is a diagrammatic view of a lower lattice work according to fig. 1c with an upper building forming the body of an ISO-container,

Fig. 3a is a diagrammatic view of a load carrier formed as a roll on/roll of container,

Fig. 3b is a diagrammatic view of a built-on unit which can be attached at the roll on/roll of container according to fig. 3a to increase the hight of the same, and

Fig. 4 is a diagrammatic view of a variant of the load carrier body shown in fig. 2b - here equipped with a wholly openable side.

In fig. 1a a lower lattice work is shown at the load carrier/load carrier body according to the invention. The lower lattice work comprises an outer frame profile 2, a longitudinal central section bar 3, transversal section bars 4a - e, and diagonally section bars 5a - 5b and 6a - 6b.

In fig. 1b and 1c variants of the lower lattice work 1' and 1" are shown with a different disposition of the transverse and diagonally section bars 6' and 6", respectively. In fig. 1c the lower lattice work of an ISO-container is shown and which also is equipped with open section bars for the recievement of forks of a fork lift stacker.

In fig. 2a a diagrammatic view of a load carrier/load carrier body is shown which is formed as a body of a roll on/roll of container, wherein at the same time a lattice work reinforcement 10,11 of the load exchanging frame 9 is shown and which has the conventional

arrangement 12 for attachment to a load exchanging frame at a load exchanging vehicle. Thus the load exchanging frame 9 has a lattice work reinforced bar, preferably an U-bar, which according to its weight will have an essentially increased load carrying capacity. Thus the load will be distributed by the lattice work reinforced rim, which essentially will prohibit the appearance of stress concentrations. When the lattice work reinforced rim is used at the load carrying frames for roll on/roll off of containers, the advantages will be obvious as a load exchanging frame will be exposed to such alternating and great loads that up till now high stress concentrations leading to fatigue cracks and short term of life have hardly been possible to avoid.

In fig. 2b an upper building 13 at the load carrier/load carrier body is shown. The sides 14a and 14b are symmetrical and have vertical posts 15a - c, forward and rearward corner posts 16 and 17, respectively, and an upper profile portion 18, and cross bar profiles 19a - c and 20a - c, respectively. At the front part there are also cross bar profiles 22 and 23 and at the rear side there are two openable doors 25a - b.

In fig. 2c, which is similar to fig. 2b, but which doesn't show any load exchanging arrangements as it is a body of an ISO-container, there are diagonally extending profiles 26a - c and 27a - c. - See also fig. 1c.

In fig. 3a a diagrammatic view of a roll on/roll off of container 28 for transporting gravel is shown with the load exchanging frame forming a forward stem with a lifting and pulling hook. A sloping surface 29 between the base and the wall make it easier to unload the container. In fig. 3b the built-on unit 30 with the upper frame profile 31 and diagonal profiles 32a - c, 33a - c, 34 and 35 is shown.

Finally in fig. 4 is shown a diagrammatic view of another embodiment of the load carrier body shown in fig. 2b and which has a fully openable side. This openability has been able to achieve thanks to the very strong and robust load carrying body in the shape of a lattice work reinforced lower part. By making the lower part as a lattice work it is possible to withstand the stresses appearing when one side is opened. If both sides of the container are openable it is here advantageous if the opening of one side include the locking of

the other side, i.e. in the normal case it shall not be possible to have both sides open at the same time.

The invention is not restricted to the above shown embodiments but modifications can be done within the scoop of the appended claims.

CLAIMS

1. Load carrier/load carrier body, preferably a container, characterized in that both the bottom and the side walls of the load carrier/load carrier body are load distributing lattice works.
2. Load carrier/load carrier body according to claim 1 at a roll on/roll of container, characterized in that the container has a load exchanging frame (8) with two separate and parallel U-bars, the inner ribs of each being reinforced by a lattice work (10,11).
3. Load carrier/load carrier body according to claim 2, characterized in that the lattice work are at the inside of the profile bar.
4. Load carrier/load carrier body according to claim 2, characterized in that the bar is an U-bar.
5. Load carrier/load carrier body according to claim 2, characterized in that bar is an I-bar.
6. Load carrier/load carrier body according to claim 5, characterized in that the I-bar is reinforced by lattice works at both sides in connection to the rib of the bar.
7. Load carrier/load carrier body according to any of the proceeding claim forming part of a container, characterized in that at least one side wall of the container is arranged foldable and openable.

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Fig. 1a

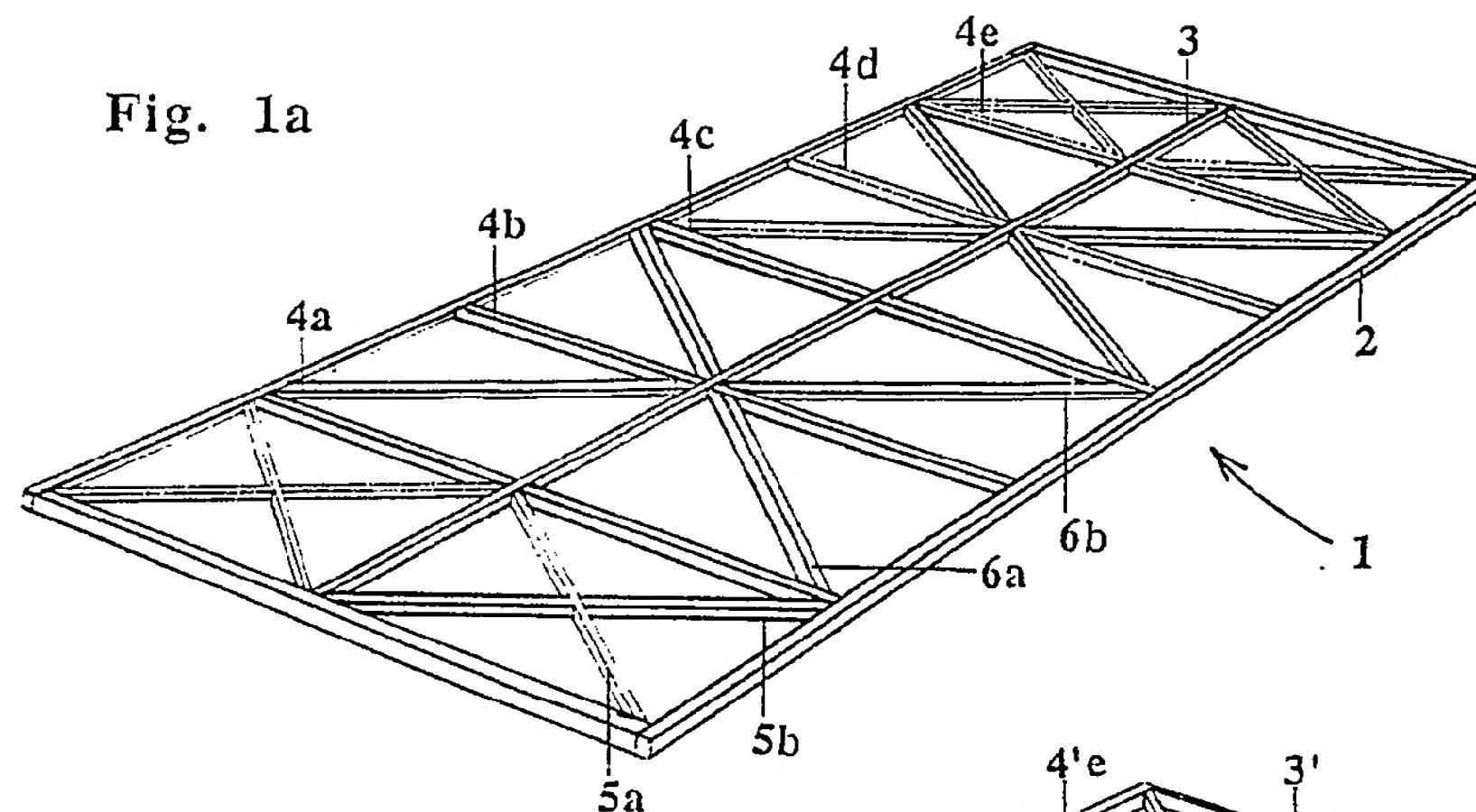


Fig. 1b

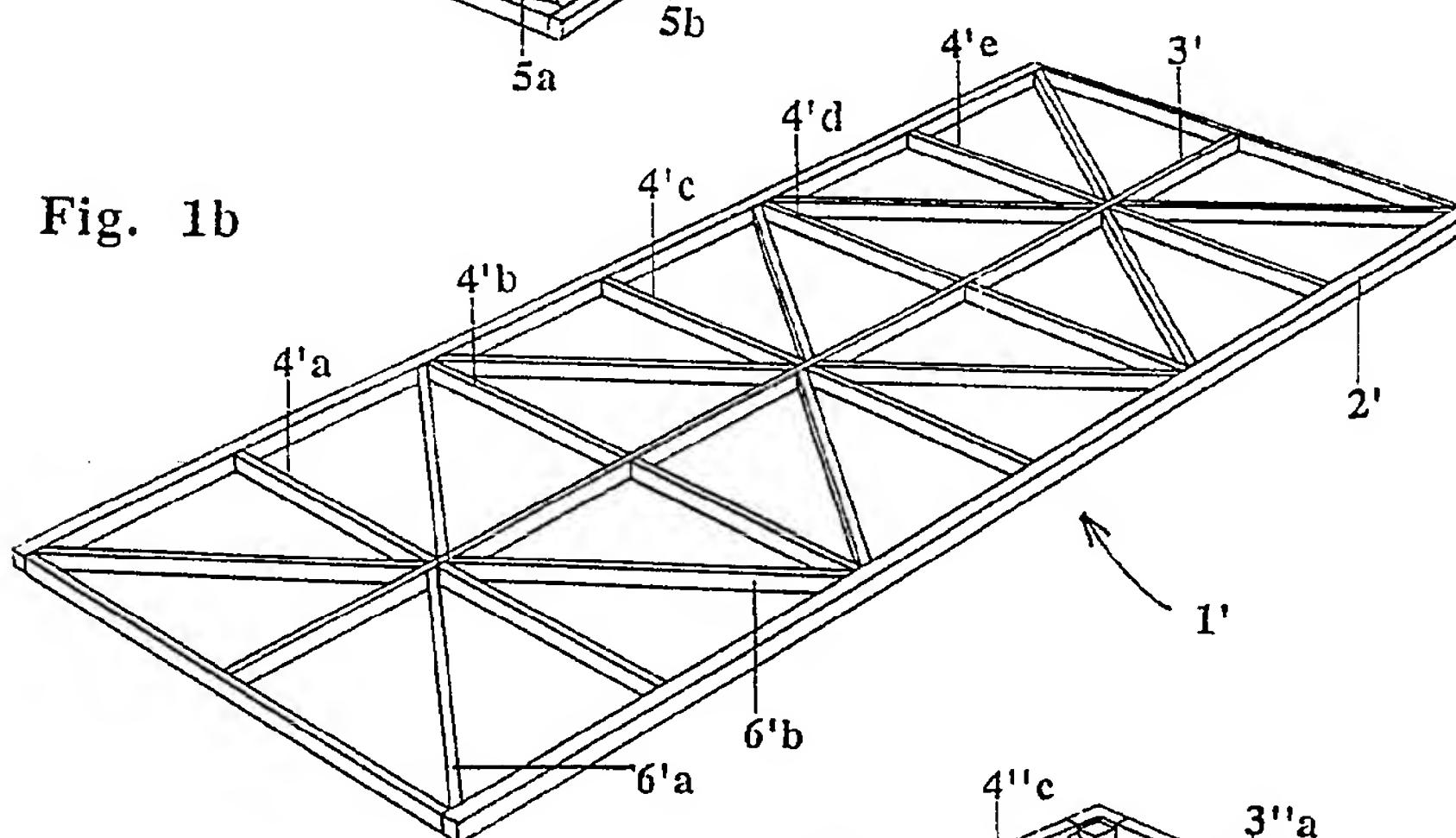


Fig. 1c

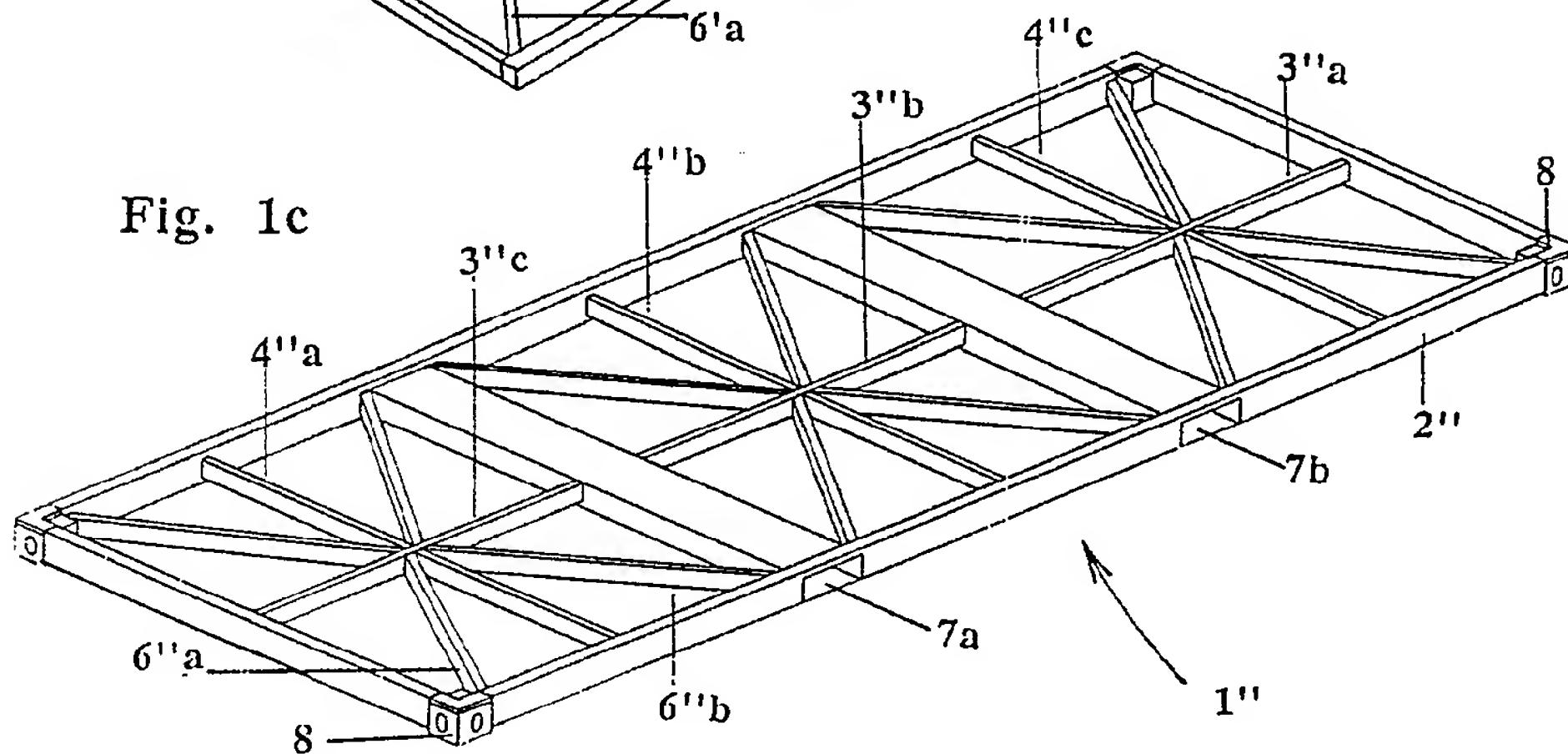
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Fig. 2a

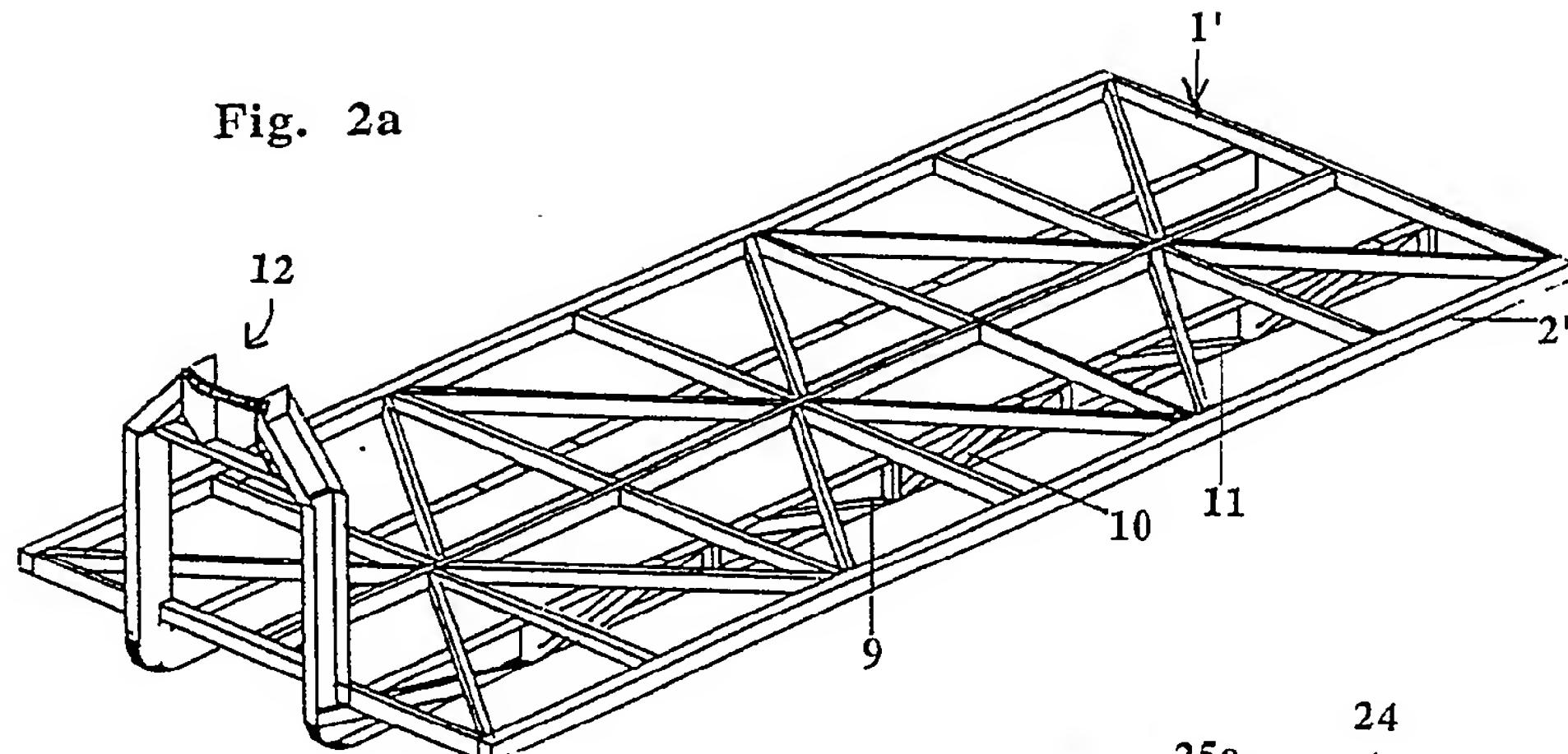
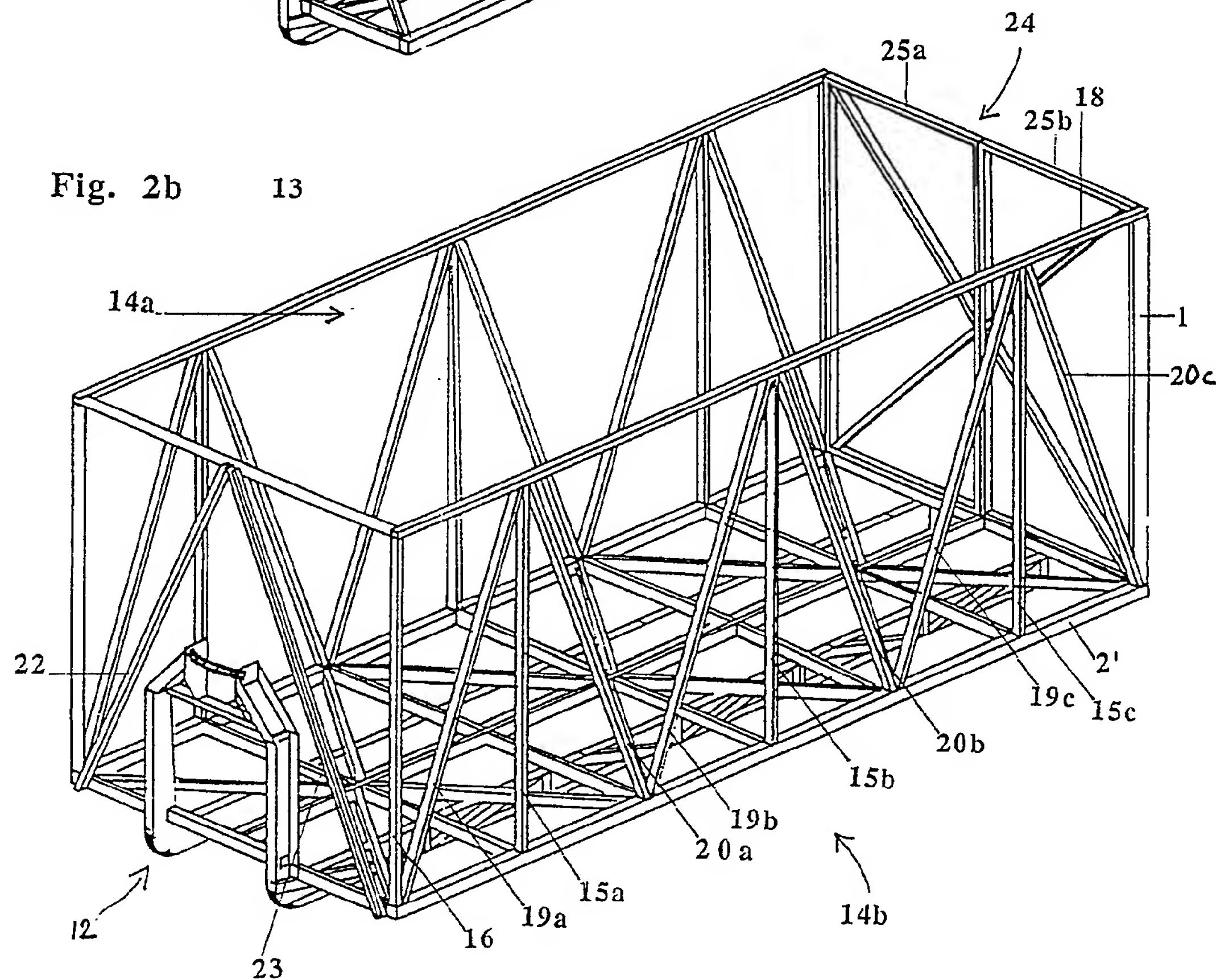


Fig. 2b 13



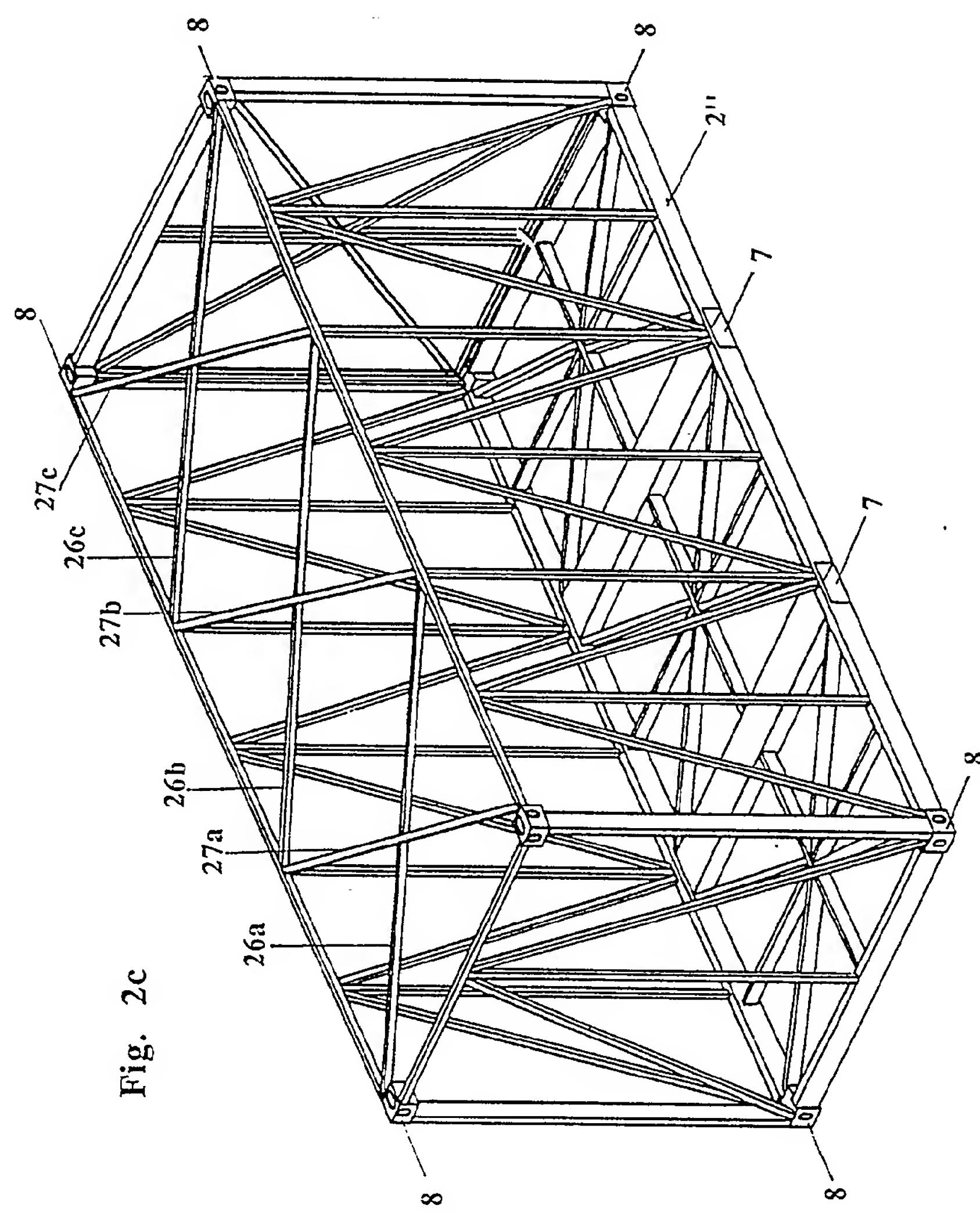


Fig. 3b

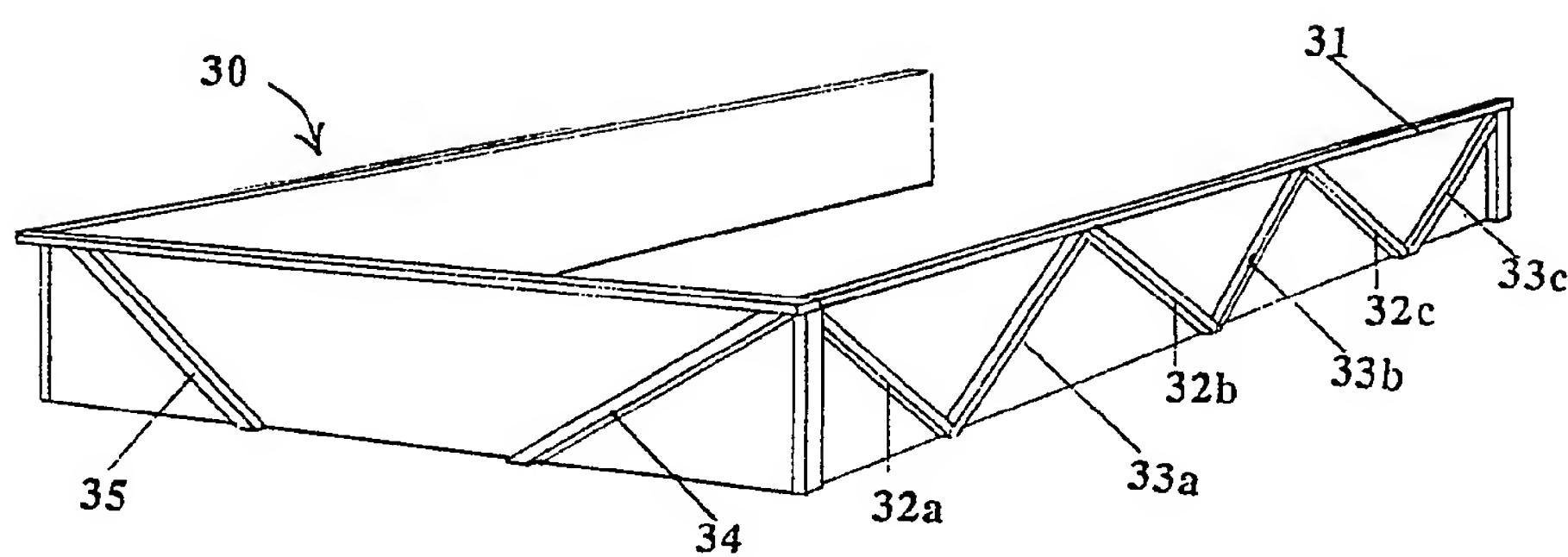
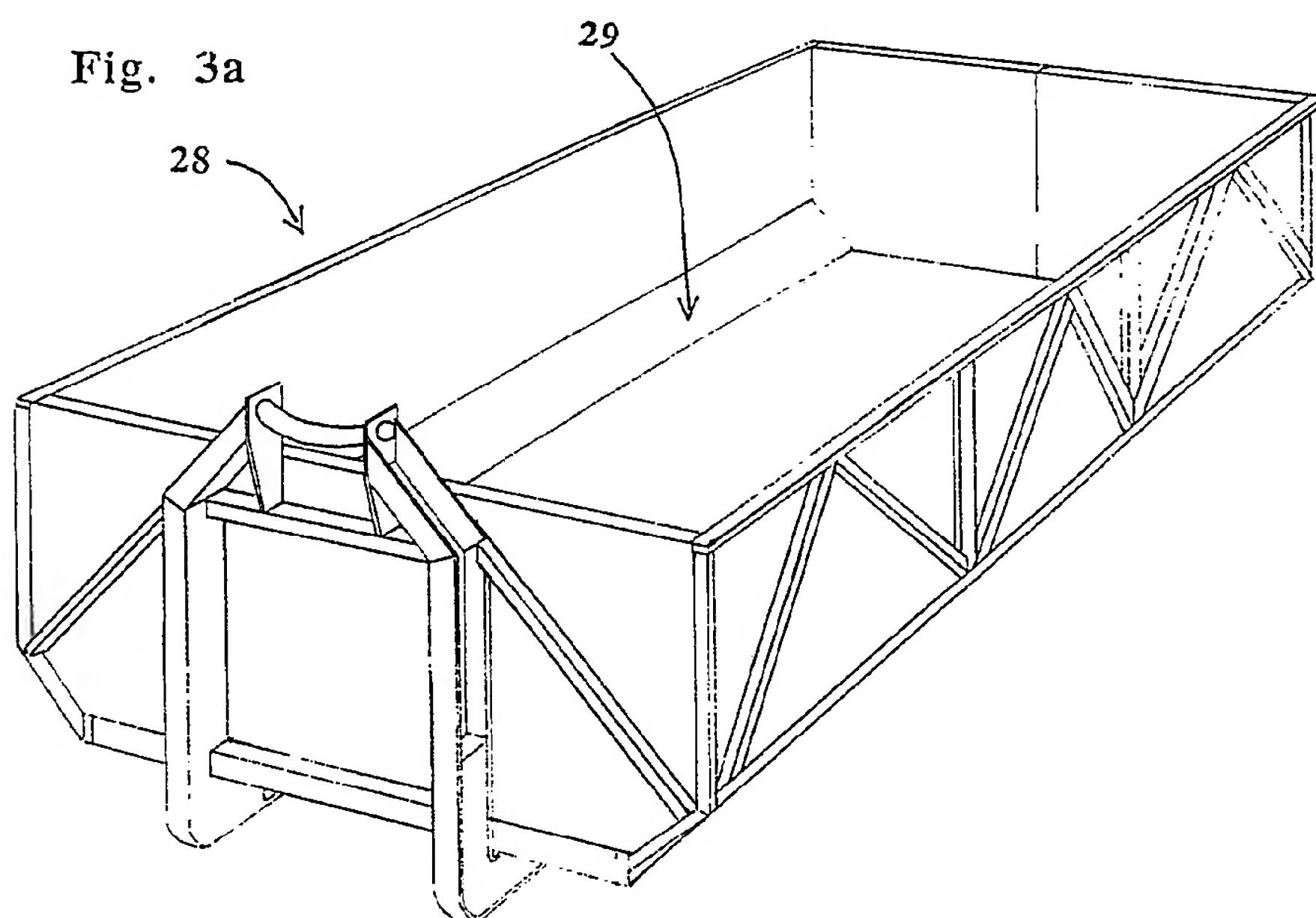
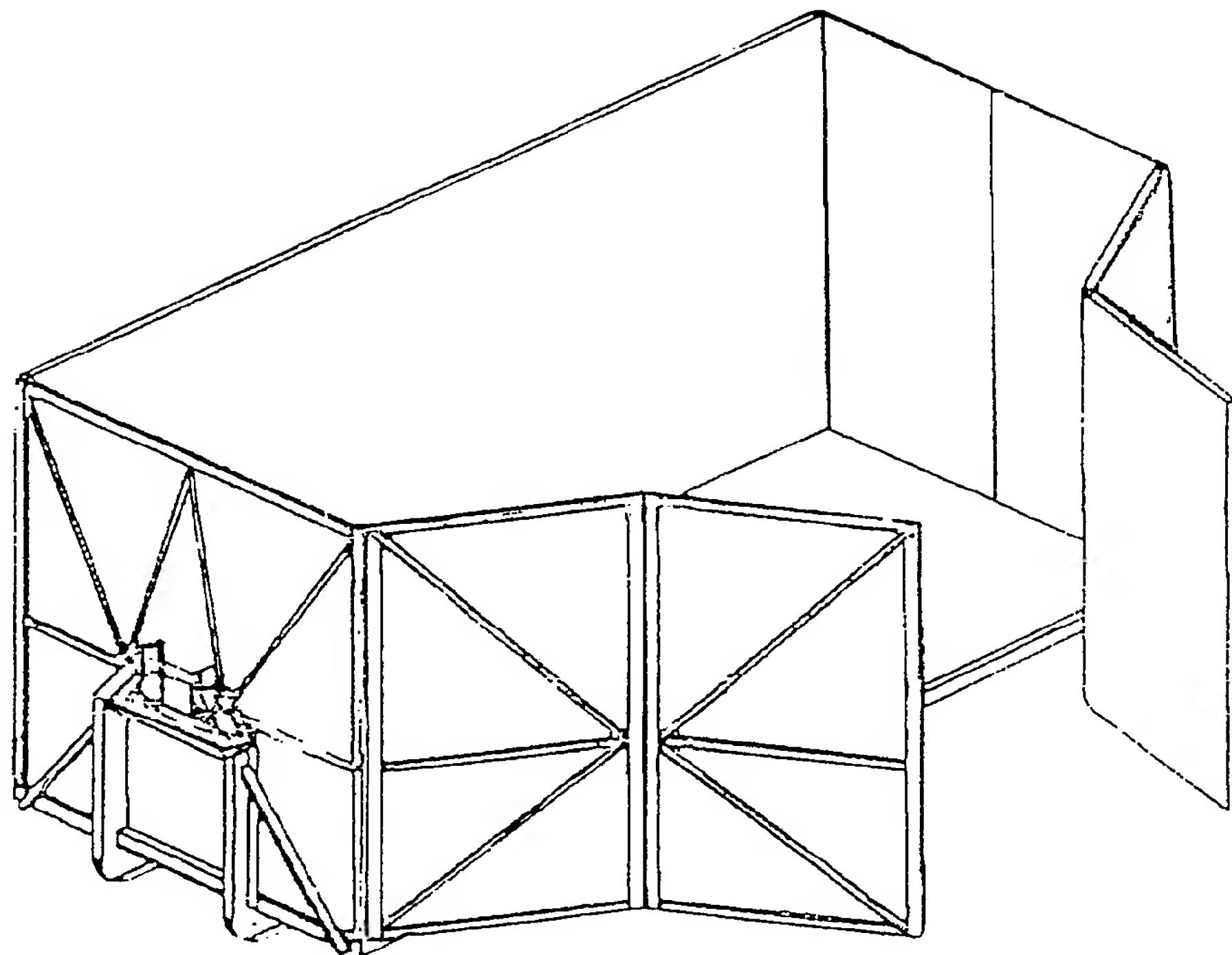


Fig. 3a



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Fig. 4



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INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 92/00479

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)⁶

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: B 60 P 1/64, B 65 D 90/02

II. FIELDS SEARCHED

Minimum Documentation Searched⁷

Classification System	Classification Symbols
IPC5	B 60 P; B 62 D; B 65 D

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in Fields Searched⁸

SE,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹

Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	EP, A1, 0001176 (CHRIS HUDSON (INTERNATIONAL) LIMITED) 21 March 1979, see page 9, line 18 - line 29; figure 12 --	1-6
X	CH, A, 150501 (EWAK A.-G.,) 16 January 1932, see page 1, column 2, line 16 - line 21; figure 1	1
Y	--	7
Y	FI, B, 82646 (ROVANIEMEN KONEPAJA KY) 31 December 1990, see figure 2 --	7
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* Special categories of cited documents:¹⁰

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IV. CERTIFICATION

Date of the Actual Completion of the International Search

9th October 1992

Date of Mailing of this International Search Report

07-10-1992

International Searching Authority

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A	SE, B, 429526 (SEA FLATS AB) 12 September 1983, see the whole document ---	1
A	FR, A, 2109599 (CONSTRUCTIONS HYDRO-MECANIQUES VINCENT SEMPERE) 26 May 1972, see the whole document ---	1
A	AU, B1, 1527876 (ROBINSON, B.J.) 5 January 1978, see the whole document ---	1
A	US, A, 3398850 (H.J. KENNARD) 27 August 1968, see the whole document -----	1

ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.PCT/SE 92/00479

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A1- 0001176	79-03-21	GB-A-	1604027
CH-A- 150501	32-01-16	NONE	
FI-B- 82646	90-12-31	NONE	
DK-B- 159762	90-12-03	NONE	
SE-B- 429526	83-09-12	SE-A-	8007694
FR-A- 2109599	72-05-26	NONE	
AU-B1- 1527876	78-01-05	NONE	
US-A- 3398850	68-08-27	NONE	